

REEL # 18
LEVI, D.T.

USSR

UDC 669.017.12

LEVI, L. I., BALABANKIN, V. Ye., POPOVA, N. Yu., and SKAZIN, V. Ye., Moscow
Institute of Steel and Alloys, Scientific Research Institute of Electrical
Engineering

"On the Problem of Improving Nickel-Calcium Alloys"

Ordzhonikidze, Tsvetnaya Metallurgiya, No 1, 1972, pp 109-111

Abstract: The deoxidation of nickel and nickel-calcium alloys by blowing the surface of the liquid bath with hydrogen and continuously evacuating gas from the furnace chamber was investigated on brands N2-2 and NO nickel. It was found that 8-12 l/min hydrogen blowing for 20 min guarantees sufficiently complete deoxidation of nickel (0.003-0.001% O₂), regardless of initial oxygen concentration. With purging temperatures of 1530° and higher, the ingots showed large grains; with a temperature of 1480° equiaxial small-sized grains predominated. The typical structure of the produced NIKA alloy is discussed by reference to its microstructure. These alloys contain fewer impurities than existing alloys. Two illustrations, nine bibliographic references.

1/1

Acc. Nr: **AP0043937**

Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i
Immunobiologii, 1970, Nr 2, pp 8-13
IMMUNOGENIC AND ALLERGENIC ANTIGENS
OF MYCOBACTERIA TUBERCULOSIS

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002201810001-6"

Report 1

A Study of Laboratory Models for Assessment
of the Immunizing Capacity of Tuberculosis Vaccines

T. B. Yablokova, T. P. Kozhevnikova, D. T. Levi

This report is a part of combined work intended to be carried out according to the WHO program together with specialized laboratories of a number of countries. The principal task of these investigations is elaboration of a standard test of protection against tuberculosis on animals.

The first comparative study of live vaccines and of immunogenic substances of mycobacteria in various test-systems pointed to the difference between individual preparations in some of the experiments, and similarity in others. A higher immunological activity of live BCG vaccine was regularly noted. Analogous results were obtained by other participants of this work.

Further combined investigations are deemed expedient, but the number of test-vaccines and test-systems should be limited so as the materials obtained were more accessible for comparative analysis.

REEL/FRAME
19770363

6 DI

USSR

LEVI, L. I. and GLADYSHEV, S. A., Moscow Institute of Steel and Alloys

"The Formation of Sphere-Type Graphite in Synthetic Fe-C-Si Alloys"

Moscow, Izvestiya vysshikh uchebnykh zavedeniy: Chernaya metallurgiya, No 5, 1971, pp 155-157

Abstract: The authors study the microstructure, gas content, and the qualitative distribution of C, N, Si, O, and Mg, using the "Samosa" microanalyzer. The results show that graphite is lamellar in admixture-pure Fe-C-Si alloys of hypoeutectic, hypereutectic, and eutectic composition. Original article: one figure, one table, and eight bibliographic entries.

1/1

Nickel

USSR

UDC 669.245.018.44:669.786

LEVI, L. I., BORISOVA, O. M., KOZLOVA, V. S., and PUSHIN, B. A.

"Nitrogen in Complexly Alloyed Nickel Casting Alloys"

Liteyn. proiz-vo (Foundry Production), 1970, No 7, pp 24-26 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 11823 by M. PROLOVA)

Translation: The use of ordinary methods of nitrogen determination (distillation of N in the form of ammonia and vacuum melting) cannot be recommended for complexly alloyed Ni alloys due to the obtaining of sharply understated results. The authors suggest a new, differential method of nitrogen determination (a chemical method, with fusion of precipitate and subsequent analysis), which makes possible nitrogen determination in solid solution and nitride phases. With the help of the new method an investigation was made of heat-resistant ZhS-6K brand Ni alloy. N concentrates mainly, not in solid solution, but in nitride phases (CrN, TiN, etc.). Total nitrogen content depends on the conditions of alloy smelting. It is assumed that carbonitride and nitrocarbide phases of the $M_{x-1}C_yN_z$ type are present in the alloy. Two tables. Bibliography of seven titles.

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--EVALUATION OF THE PROPERTIES OF CAST IRON BASED ON CHILL TESTS -U-
AUTHOR--LEVI, L.I., KLETSKIN, G.I., SOBOL, N.L., KITAYEV, YA.A.
COUNTRY OF INFO--USSR
SOURCE--LITEINOE PROIZVOD. 1970, (1), 6-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CAST IRON, SILICON, METALLURGIC PROCESS CONTROL, TENSILE
STRENGTH, METAL HARDNESS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--1988/1318 STEP NO--UR/0128/70/000/001/0006/0007
CIRC ACCESSION NO--AP0106095
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11SEP70

2/2 029

CIRC ACCESSION NO--AP0106095

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON THE BASIS OF INDUSTRIAL CONTROL DATA AN ATTEMPT WAS MADE TO CORRELATE TENSILE STRENGTH AND HARDNESS VALUES WITH RESULTS OF THE CHILL TEST FOR 2 GRADES OF GRAY CAST IRON MELTED IN AN 11 TON COKE GAS CUPOLA WITH PREHEATED BLAST (C 2.84-3.31, 3.07-3.34; SI 1.21-2.84, 1.31-1.84; MN 0.80-1.72, 0.90-1.63; P 0.25, 0.25, S 0.11, 0.11 WT. PERCENT, RESP.). THE 1ST CAST IRON WAS MODIFIED WITH CA 0.4-1.1PERCENT, WHILE THE 2ND WAS UNMODIFIED. STUDIED CAST IRONS WERE CAST INTO DRY MOLDS DIAM. 30, LENGTH 340 MM, AS WELL AS IN CHILL TEST MOLDS, REPRESENTING PLATES 50 TIMES 20 AND 50 TIMES 8, RESP.. IN WHICH THE ONE SIDE WAS COOLED BY A MASSIVE METAL BLOCK. REGRESSION EQUATIONS WERE CALCD. FOR THE TENSILE STRENGTH AND HARDNESS DETNS.; THESE DID NOT SHOW ANY SIGNIFICANT CORRELATION. THE REASON FOR THIS WAS THAT SI CONCN. AFFECTED THE FORMATION OF CEMENTITE LAYER 5-7 TIMES MORE STRONGLY THAN IT AFFECTED THE TENSILE STRENGTH AND HARDNESS.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--090C170
TITLE--EFFECT OF HIGH TEMPERATURE OVERHEATING ON THE PROPERTIES OF FOUNDRY
CAST IRONS -U-
AUTHOR--1021-LEVI, L.I., GLADYSHEV, S.A.
COUNTRY OF INFO--USSR
SOURCE--LITEINDE PROIZVOD. 1970, (11), 17-18
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--CAST IRON, ALLOY COMPOSITION, BORON, NONMETALLIC INCLUSION,
HELIUM, NITROGEN, OXYGEN, BLAST FURNACE, HIGH TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/1341

STEP NO--UR/0128/70/000/001/0017/0013

CIRC ACCESSION NO--AP0116801

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0116801

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF HIGH TEMP. (1800DEGREES) OVERHEATING IN HE ON THE STRUCTURE, GAS CONTENT, AMT. AND COMPN. OF NONMETALLIC INCLUSIONS WAS STUDIED WITH 3 KINDS OF BLAST FURNACE FOUNDRY CAST IRON FROM 3 STEEL MILLS WITH VARIED CHEM. COMPN. AS FOLLOWS: (SEE ON MICROFICHE). EACH CAST IRON WAS HEATED IN A VACUUM FURNACE TVV-4 TO 1000DEGREES AT 1 TIMES 10 NEGATIVE PRIME4 TORR, THEN THE FURNACE WAS FILLED WITH HE AND THE CAST IRON MELTED AND HELD 10 MIN AT 1800DEGREES. THE CHEM. COMPN. AFTER SUPERHEATING IN HE PRACTICALLY DID NOT CHANGE; HOWEVER, THE OTHER ABOVE MENTIONED PROPERTIES AND STRUCTURAL COMPONENTS UNDERWENT CONSIDERABLE CHANGE. THE AMT., DISTRIBUTION, AND SHAPE OF GRAPHITE INCLUSIONS CHANGED VERY VARIEDLY DEPENDING ON THE KIND OF CAST IRON. THE AMT. OF PEARLITE DECREASED IN THE 1ST CAST IRON FROM 80 TO 30PERCENT, IN THE 2ND FROM 98 TO 59PERCENT, AND IN THE 3RD FROM 90 TO 20PERCENT. ALSO THE DISTRIBUTION AND SIZE OF PARTICLES CHANGED VARIOUSLY DEPENDING ON THE PARTICULAR CAST IRON. PHOSPHIDE EUTECTIC REMAINED LARGELY UNCHANGED. MICROHARDNESS OF PEARLITE AND FERRITE DECREASED FROM 178-231 TO 167-174, AND FROM 95-182 TO 68.1-89.4 KG-MM PRIME2, RESP. THE AMT. OF GASES DECREASED PRINCIPALLY ON ACCOUNT OF THE ELIMINATION OF O AND N. THE AMT. AND COMPN. OF NONMETALLIC INCLUSIONS UNDERWENT CONSIDERABLE CHANGE WHICH VARIED GREATLY FROM ONE KIND OF CAST IRON TO THE OTHER. THE OBSD. CHANGES DEPENDED PRIMARILY ON THE SOURCE (HISTORY) AND COMPN. OF A GIVEN CAST IRON.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--25OCT70
TITLE--EVALUATION OF THE PROPERTIES OF CAST IRON BY CHEMICAL AND
THERMOGRAPHIC ANALYSES -U-
AUTHOR-(04)-LEVI, L.I., KLETSKIN, G.I., SOBOL, N.L., KITAYEV, YA.A.
COUNTRY OF INFO--USSR
SOURCE--LITEINOE PROZIVED. 1970, 2, 7-8
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS
TOPIC TAGS--CAST IRON, ALLOY COMPOSITION, MECHANICAL PROPERTY,
THERMOGRAPHIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1996/I733 STEP NO--UR/0128/70/002/000/0007/0008
CIRC ACCESSION NO--AP0118711
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 012

CIRC ACCESSION NO--AP0118711
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE TEMP. INTERVAL OF SOLIDIFICATION CAN BE DETD. RAPIDLY IN 1-5 MIN BY A THERMOGRAPHICAL METHOD AND FOR STABLE CONDITIONS IT CAN BE USED FOR THE EVALUATION OF MECH. PROPERTIES OF CAST IRONS. THE RELIABILITY OF THIS PROCEDURE WAS VERIFIED WITH 3 KINDS OF CAST IRONS A, B, AND C. (C 2.84-3.31, 3.07-3.34, 3.15-3.40; SI 1.21-2.84, 1.31-1.34, 1.80-2.30; AND MN 0.08-1.72, 0.80-1.63, 0.60-1.10 WT. PERCENT, RESP.) REGRESSION EQUATIONS WERE DETD. FOR TENSILE STRENGTH AND HARDNESS IN DEPENDENCE ON THE TEMP. INTERVAL OF CRYSTN. FROM THERMOGRAPHICAL ANALYSES. SIMILAR EQUATIONS WERE DETD. FOR TENSILE STRENGTH AND HARDNESS IN DEPENDENCE ON THE CONC. OF SI AND C FROM CHEM. ANALYSES. BOTH THERMOGRAPHICAL AND CHEM. METHODS GAVE ANALOGOUS CORRELATION COEFFS. FOR EACH OF THE 3 CAST IRONS, THE BEST COEFF. WAS OBTAINED FOR THE CAST IRON WHICH HAD THE MOST STABLE CHEM. COMP. OF CHARGING MATERIALS.

UNCLASSIFIED

UDC 591.132.8:598.9+616.931.452

USSR

LOBACHEV, V. S., ~~LEVI, N. I.~~, and LIVSHITZ, M. M., Moscow State University and Central Control-Research Laboratory of Moscow Municipal Disinfection Station

"Retention of the Specific Antigen of Plague Bacteria in Pellets of Predatory Birds"

Moscow, Zoologicheskiiy Zhurnal, Vol 50, No 10, 1971, pp 1593-1595

Abstract: Specific antigens found in the pellets of predatory birds which have eaten the corpses of infected rodents survive longer than the plague bacteria themselves. This experiment, in which a study was made of pellets of the little owl and the black kite after feeding on dead mice infected with the vaccinal strain EV, compares the antibody neutralization reaction with the passive hemagglutination reaction. The latter was more sensitive. The antigen is better preserved in the pellets of nocturnal predators and more concentrated in hair than in bones. Because of its efficiency, this method is one of the best to be utilized in epizootiological experiments with regard to small mammals.

1/1

1/2 024 UNCLASSIFIED PROCESSING DATE--020CT7J
TITLE--SPECIFICITY OF SEROLOGICAL REACTIONS BASED ON SERUM BACTERICIDITY
-U-
AUTHOR--(05)--RUKHADZE, E.Z., LEVI, M.I., TENDEINIK, YU.YA., PRYAMUKHINA,
N.S., VYDRINA, YE.I.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3,
PP 63-68
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SEROLOGIC TEST, DYSENTERY, TYPHOID FEVER ANTIGEN, SALMONELLA
TYPHIMURIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1990/1487

STEP NO--UR/0016/70/000/003/0063/0068

CIRC ACCESSION NO--AP0109547

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109547

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPECIFICITY OF BACTERIOLYSIS REACTION WAS STUDIED ON A MODEL OF THE CAUSATIVE AGENTS OF DYSENTERY, TYPHOID FEVER AND TYPHIMURIUM. REACTIONS OF BACTERIOLYSIS AND OF BACTERIOLYSIN NEUTRALIZATION WERE DESCRIBED. SPECIFICITY OF BACTERIOLYSIS PHENOMENON WAS DEMONSTRATED BY THE REACTION OF BACTERIOLYSINS, WHEREAS REACTION OF BACTERIOLYSIN NEUTRALIZATION CAN BE RECOMMENDED FOR DETECTION OF SMALL AMOUNTS OF COMPLETE ANTIGENS OF VARIOUS BACTERIA.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CONFORMITY BETWEEN THE CALCULATED AND RECORDED NUMBER OF PRIMARY
INFECTIOUS DISEASES IN CHILDREN'S COLLECTIVE BODIES -U-
AUTHOR-(03)-LEVI, M.I., TURCHANINA, N.A., ZAYDNER, G.B.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 6,

PP 90-95

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEDIATRICS, INFECTIOUS DISEASE, MATHEMATIC ANALYSIS, POISSON
EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/0416

STEP NO--UR/0016/70/000/006/0070/0095

CIRC ACCESSION NO--AP0126169

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126169

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD OF DETERMINATION OF THE NUMBER OF PRIMARY (BROUGHT IN) PATIENTS SUFFERING FROM INFECTIOUS DISEASES IN CHILDREN'S COLLECTIVE BODIES BY COMPARING THE NUMBER OF GROUPS FREE OF INFECTIONS WITH THE NUMBER OF ALL THE GROUPS WAS USED. THIS METHOD WAS SHOWN TO CORRELATE WELL WITH THE RECORDED NUMBER OF PATIENTS. THIS POINTED OUT THAT THE SUPPOSITION THAT DISTRIBUTION OF PRIMARY PATIENTS IN COLLECTIVE BODIES CORRESPONDED TO POUASSON'S DISTRIBUTION WAS CORRECT. THE NUMBER OF PRIMARY PATIENTS FAILED TO DEPEND DIRECTLY EITHER UPON THE CHARACTER OF THE INFECTION OR THE NUMBER OF DISEASES, BUT DEPENDED ON THE NUMBER OF COLLECTIVE BODIES FREE OF INFECTIONS, AND ON THE TOTAL NUMBER OF COLLECTIVE BODIES.
FACILITY: MOSKOVSKAYA GORODSKAYA DEZINFEKTSIONNAYA STANTSIYA I
SANITARNO-EPIDEMIOLOGICHESKAYA STANTSIYA KIYEVSKOGO RAYONA MOSKVY.

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0126104

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SERA OF GUINEA PIGS CONTG. NO LESS THAN 50 HEMOLYTIC UNITS OF COMPLEMENT PER 1 ML WERE USED. THE ABSORPTION SUSPENSION WAS PREPD. FROM A CULTURE S. TYPHI 1203 KILLED WITH 10PERCENT FORMALDEHYDE, WASHED AND CENTRIFUGED AT 3000 RPM FOR 1 HR. THE SERUM DILD. 1:10 WAS ADDED TO THE SEDIMENT, THE MIXT. WAS KEPT FOR 0.5-18 HR AT 4-5DEGREES, AND AGAIN CENTRIFUGED AT LOW TEMP. THE LIBERATED COMPLEMENT WAS THEN TESTED BY THE BACTERIOLYTIC REACTION (V. A. KILESSO, ET AL., 1967). BEST RESULTS WERE OBTAINED WITH A 1 HR ABSORPTION WHICH WAS REPEATED TWICE. SHEEP ERYTHROCYTES TREATED WITH FORMALDEHYDE AND SENSITIZED BY HOMOLOGOUS O ANTIGEN WERE ALSO USED SUCCESSFULLY FOR THE ABSORPTION. FACILITY: ESSENT. NAUCH.-ISSLED. INST. EPIDEMIOLOG., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 615.371.015.13

LEVI, M. I., BASOVA, N. N., and DURIKHIN, K. V., Moscow Municipal Disinfection Station and Central Institute of Epidemiology

"Relationship Between the Dose of Soluble Antigen and the Plasma Cell Reaction in a Regional Lymph Node After Primary Immunization (A Mathematical Model)"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1972, pp 19-25

Abstract: The dose of soluble antigen injected into the organism determines the plasma cell reaction in a regional lymph node. The accumulation of cells of the plasmacyte series is directly proportional to the square of the logarithm of the dose of antigen injected. The main elements of the primary immune response of animals to the injection of soluble antigen (logarithm of the antigen dose, duration of stay at the injection site, accumulation of plasma cells, specific rate of removal of antigen from the injection site, modulus of transition from antigen to plasma cells) can be related by fairly simple equations, which make up the suggested mathematical model. The differences between the organism's response to injection of the same soluble antigen in one place and in different places can be explained by the quantitative patterns of the plasma cell reaction. In an experiment with white rats, injection of Part.

1/2

- 18 -

USSR

LEVI, M. I., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii,
No 10, 1972, pp 19-25

pestis capsular antigen in sorbed form or mixed with incomplete Freund's
adjuvant markedly decreased the specific rate of absorption of the antigen from
the injection site and increased proportionately the number of plasma cells in
the regional lymph nodes.

2/2

USSR

UDC 77

LEVI, S. M.

"Investigations in the Field of Glaze Theory and the Physicochemical Mechanics of Gelatin Photoemulsion Layers"

V sb. Mezhdunar. kongress po fotogr. nauke, Moskva, 1970. Priroda fotogr. chuvstvitel'nosti (International Congress on Photographic Science, Moscow, 1970. Nature of Photosensitivity -- Collection of Works), no place of publication given, Vneshtorgizdat, no year given, pp 345-348 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1297)

Translation: The results of studies concerning the production of initial data for a glazing theory of photoemulsion layers are presented. The data include: the effect of viscosity (η), maximum shear stress (θ), and the extent of a deformable film of suspended meniscus on the minimum deposit of emulsion still ensuring continuity of the emulsion layer; the jelling kinetics of an emulsion in the form of curves showing η and θ as functions of time for different cooling modes; isotherms of dynamic surface tension and critical rates of kinetic wetting in the presence of different wetting agents. A. L. Kartuzhanskiy.

1/1

- 54 -

USSR

UDC: 51:330.115

LEVICH, G. V., LEVICH, Ye. M.

"Abstract Definition of the Concept of a System"

V sb. Modelir. ekon. protsessov (Modeling Economic Processes--collection of works), Moscow, Moscow University, 1971, pp 473-491 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V756)

Translation: The authors consider two approaches to formal definition of the concept of a system: a) a system is an aggregate of interrelated elements; b) a system is a subset in the Cartesian product of some family of sets. A definition is given in terms of set theory. This definition corresponds intuitively to a closed system. A definition is also given of an open system. D. Epshteyn.

1/1

USSR

LEVICH, V. G., Corresponding Member of the Academy of Sciences USSR;
MAZUR, N. G.; MARKIN, V. S., Institute of Electrochemistry of the Academy
of Sciences USSR, Moscow

"Blocking of a Pulse by an Inhomogeneity in an Electrochemical Model of a
Nerve"

Moscow, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

Translation: Papers have recently appeared [V. S. Markin, V. F. Pastushenko, Biofizika, Vol. 13, pp 316 and 517, 1969] devoted to an analytical study of the passage of a nerve pulse along an inhomogeneous fiber in a model with inner current sources [V. S. Markin, Yu. A. Chizmadzhav, Biofizika, Vol. 12, p 900, 1967]. It is of interest to consider a similar problem for different physical models of a nerve fiber, particularly for the Lillie-Bonkheffer model [R. S. Lillie, Biol. Rev. Cambr. Phil. Soc., Vol. 11, p 181, 1936; K. Bonkheffer, Tr. IV soveshch. po elektrokhemii, Izd. AN SSSR, 1959, p 579; G. I. Earenblatt, V. M. Yentov, R. L. Salganik, P.M.M., Vol. 29, p 977, 1965] taking into account

1/10

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

specific physicochemical characteristics. The Lillie model consists of an iron wire in a tube with solid nitric acid. The passage of a pulse along a smooth [V. G. Levich, N. G. Mazur, V. S. Markin, D.A.N., Vol. 198, No. 4, 1971] and a myelinated [V. G. Levich, N. G. Mazur, V. S. Markin, D. A.N., Vol. 195, p 206, 1970] fiber was studied in this model. The motion of an activation pulse in an inhomogeneous Lillie model is investigated below and the results are compared with experimental data [K. Yamagiwa, Japan. Med. J., Vol. 2, p 38, 1949].

1. Abrupt Inhomogeneity

The state of the system is described by the potential $\phi(x, t)$, the proportion of free to passivating film of oxide of the surface $a(x, t)$ and the concentration $c(x, t)$ of one of the reaction products, nitric acid. In this problem one can neglect the change in the latter quantity and put $c(x, t) = c_0 = \text{const}$, since the change in $c(x, t)$ occurs only in the zone at the far end of the tail (in the repassivation process).

The change in the potential in the portion of the active surface is determined by the equations

2/10

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

$$\partial^2 \phi / \partial x^2 + R(j_{Fe} + j_f + j_{acid}) = 0, \quad (1)$$

$$\partial \alpha / \partial t + 1/Q j_f = 0, \quad (2)$$

where $R = R_1 = \rho \sigma_1 / S_1$ for $x < 0$ and $R = R_2 = \rho \sigma_2 / S$ for $x > 0$. The letters $\sigma_{1,2}$ and $S_{1,2}$ denote the perimeter of the cross section of the wire and the area of the cross section of the electrolyte in the tube, respectively. In other words it is assumed that the inhomogeneity is localized at the point $x=0$.

Expressions for the equivalent currents of the processes of active solution of iron, breakdown, and the formation of a passivating film and restoration of nitric acid to nitrous have the form (in the linear approximation)

$$\begin{aligned} j_{Fe} &= A(\phi_1 - \phi)\alpha; \\ j_f &= A \cdot \begin{cases} \phi_* - \phi)(1-\alpha) & \text{for } \phi > \phi_*, \\ \phi_* - \phi)\alpha & \text{for } \phi < \phi_*, \end{cases} \end{aligned} \quad (3)$$

3/10

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

$$j_{\text{acid}} = \begin{cases} 0 & \text{for } \phi = 0, \\ -j_{c0} & \text{for } \phi > 0. \end{cases}$$

The threshold potential ϕ_* is characterized by the fact that for $\phi > \phi_*$ there occurs breakdown on the film and for $\phi < \phi_*$ there is formation on the film.

The purpose of the problem is to explain conditions under which an activation pulse is blocked by an inhomogeneity. This question can be answered by studying stationary states of the system.

One can easily obtain from the condition $\partial\alpha/\partial t = 0$, considering (2) and (3), the general form of the stationary solution: either $\alpha = 0$ and $\phi < \phi_*$ or $\alpha = 1$ and $\phi > \phi_*$. To be specific we shall consider a pulse arriving from the left. In accordance with the condition $\alpha(x, t) = \alpha_0$ (absence of repassivation) it consists of a simple activation wave. It is clear that stationary states of two types can develop from this pulse as $t \rightarrow \infty$: either $\alpha \equiv 1$, which corresponds to the passage of the pulse, or

4/10

$$\begin{aligned} \alpha &= 1 \text{ for } x < l, \\ \alpha &= 0 \text{ for } x > l, \end{aligned} \tag{4}$$

- 14 -

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

which corresponds to blocking (stopping of the front of the pulse at the point $x = l$).

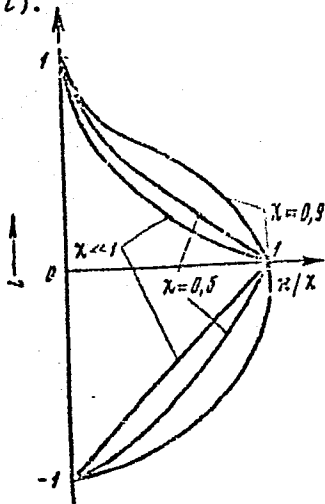


Fig. 1

5/10

Fig. 1. $l(\kappa)$ as a function of certain values of the parameter χ . For convenience different units of measurement of length (characteristic for each region) were chosen for $l > 0$ and $l < 0$.

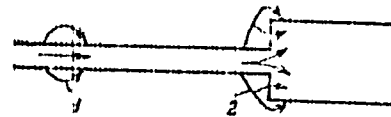


Fig. 2

Fig. 2. Local currents in an activation pulse. 1--front of pulse far from junction, 2--front of pulse in region of junction.

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

The method of solution of the problem is the following. If ϕ is substituted into equation (1) in form (4), a linear equation is obtained with a piecewise-constant coefficient. Besides the condition of boundedness of ϕ and continuity together with the first derivative distinguishing a solution of this equation for any l , there is also the condition $\phi(l) = \phi_*$. This "extraneous" condition determines l as a function of the parameters of the problem. The corresponding formulas are fairly unwieldy and therefore it is convenient to express this relationship graphically. Fig. 1 shows the graph l as a function of the geometric parameter $\kappa = \sigma_1 S_1 / \sigma_2 S_2$ for several values of the refractoriness parameter $\chi = 2A\phi_* j c_0 / [A(\phi_1 - \phi_*) + j c_0]^2$, which under actual conditions is much less than unity. For simplicity it may be assumed that the tube with the acid is much thicker than the wire so that $S_1/S_2 \approx 1$. Then κ will be simply the ratio of the diameter of the wire to the left of the inhomogeneity to its diameter to the right of the inhomogeneity.

6/10

- 5 -

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

It is evident from Fig. 1 that for $\kappa > \chi$ the point $l(\kappa)$ does not exist, i.e., the pulse will pass the inhomogeneity. On the contrary, for $\kappa < \chi$, i.e., when the right side of the wire is a sufficient number of times thicker than the left, two values of $l(\kappa)$ exist: $l_- < 0$ and $l_+ > 0$. It can be shown that the pulse stops at l_- without reaching the junction of the thin and thick wires. This is associated with the fact that the stationary state with $l = l_-$ is stable and unstable with $l = l_+$.

The blocking of a pulse is explained physically by the fact that as it approaches the inhomogeneity the subthreshold zone creeps up on the thicker wire and the use of current rises in it since the current is needed to be distributed over the larger area. At the same time, the activation zone in the thin wire generates a fixed activating current (Fig. 2). The activating current may not be enough for a sufficient difference in the diameters and the pulse will stop.

7/10

USSR

pp 1214-1216

2. Inhomogeneity With an Electrochemically Inert Interval

Under actual conditions the parameter χ is of the order 10^{-4} . Blocking will therefore be observed if one of the halves of the wire is tens of thousands of times thicker than the other, i.e., under actual conditions it is practically impossible to observe this effect. A one-sided conductivity is observed in a somewhat modified system, however, namely if the junction point is covered with an insulator. Fig. 3 shows a model of a synapse from the work of Yamagiwa consisting of a long wire to which is fastened a bunch of several short wires. One of the ends of the bunch is filled with paraffin. The discussions of the previous point are applicable to the theoretical calculation of this model with the only difference that in the interval $(0, h)$ one should put $j_{Fe} + j_F + j_{acid} = 0$. This interval corresponds to the part of the wire covered with paraffin. Curves $l(\kappa)$ analogous to the curves for Fig. 1 are obtained as a result of the calculation. Now, however, the maximum value of κ at which blocking is still possible is a function of h :

$$\kappa_{cr} = \chi(1 + h\sqrt{R_1 A})^2. \quad (5)$$

It is evident from this formula that the blocking action of the inhomogeneity rapidly decreases with an increase in the inert interval. Since the characteristic length $(R_1 A)^{-1/2}$ for wires ordinarily used is a value of the order of $8/10$

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

0.1 cm, values of κ_{cr} slightly less than unity are obtained in the presence of an inert segment with a length of several centimeters. In the system shown in Fig. 3, therefore, there is observed blocking of the pulse moving from the left even for a small number of wires in the bunch.

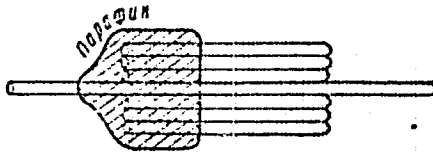


Рис. 3

Рис. 3. Система с односторонним проведением на работи (¹)

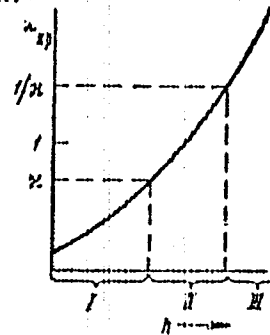


Рис. 4

Рис. 4. Зависимость критического отношения толщины от h и области двух- и односторонней проводимости и отсутствия проводимости

9/10

USSR

LEVICH, V. G., et al, Doklady Akademii nauk SSSR, Vol. 198, No. 5, 11 Jun 71, pp 1214-1216

With the aid of the graph of relationship (5) shown in Fig. 4, it is easy to construct the region of values h corresponding to a two-sided (region I) and one-sided (region II) conductivity and also to the absence of conductivity (region III). It is sufficient to take into account here that the quantity κ is replaced by $1/\kappa$ for a pulse coming from the right.

10/10

- 7 -

USSR

UDC 539.186.2

BRODSKIY, A. M., and LEVICH, V. G., Corresponding Member of the Academy of Sciences USSR, Moscow State University imeni M. V. Lomonosov

"Formulation of Equations for Rearrangement Scattering in Coordinate Representation"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 6, 1970, pp 1294-1297

Abstract: The article presents, in a coordinate representation, the derivation of nonsingular integral equations for the problem of rearrangement scattering with the participation of three composite fragments. Relations are obtained which make it possible to clarify the difficulties which arise in attempts to use adiabatic approximation in the rearrangement problem. These relations indicate the need to limit the choice of effective potentials in the distorted wave method and offer the possibility of a simple way of obtaining general threshold formulas. A subsequent article will deal with a generalized threshold consideration which allows for the long-range part of the potential.

1/1

- 45 -

Biophysics

USSR

UDC 577.37

AYT'YAN, S. Kh., LEVICH, V. G., Corresponding Member, Academy of Sciences USSR, MARKIN, V. S., and CHIZMADZEEV, Yu. A., Institute of Electrochemistry, Academy of Sciences USSR, Moscow

"Generalized Model of Ion Transport Through Artificial Phospholipid Membranes"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 6, 1970, pp 1402-1405

Abstract: A generalized model of ion transport through artificial phospholipid membranes is presented. Passage of electric current through the membrane is regarded as resulting from the direct passage of T particles, stagewise jumps of A ions, and transport of A during the action of carrier membranes. In the membrane, T and L ions can lie only on the boundary in certain potential wells, and only one ion can be present in each well (ions can enter wells only on the condition that the wells are vacant). Additionally, T and L ions may shift from wells at the left margin to the opposite well on the right boundary, provided the shift is to a vacant well.

1/1

1/2 014 UNCLASSIFIED PROCESSING DATE--090170
TITLE--THEORY OF HOMOGENEOUS REACTIONS INVOLVING PROTON TRANSFER -U-
AUTHOR--(05)-LEVICH, V.G., DOGONADZE, R.R., GERMAN, E.D., KUZNETSOV, A.M.,
KHARKATS, YU.I.
COUNTRY OF INFO--USSR
SOURCE--ELECTROCHIM, ACTA 1970, 15(2), 353-67
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PROTON, QUANTUM MECHANICS, CHEMICAL REACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1849 STEP NO--UK/000070/015/002/0353/0367
CIRC ACCESSION NO--AP0112833
UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0112833
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A QUANTUM MECH. THEORY FOR PROTON
TRANSFER PROCESSES IN SOLNS. IS GIVEN. THE BRONSTED RULE AND ISOTOPE
EFFECT FOR THESE PROCESSES ARE ALSO DISCUSSED. FACILITY: INST.
ELECTROCHEM., MOSCOW, USSR.

89

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--JUSTIFICATION OF THE SEPARATION OF ELECTRON AND NUCLEAR MOTIONS
DURING REACTIONS IN ATOMIC MOLECULAR SYSTEMS -U-
AUTHOR--(02)-BRUDSKIY, A.M., LEVICH, V.G.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 126-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL REACTION MECHANISM, ELECTRON MOTION, NUCLEAR MODEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1080 STEP NO--JR/0020/70/191/001/0126/0129
CIRC ACCESSION NO--AT0119939

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0119939

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MATH. EXAMN. OF A SIMPLE CHEM. REPLACEMENT REACTION $A - B + C$ YIELDS $A - C + B$ (WHERE A, B, C, ARE DIFFERENT ATOMS, AND $A - B$, $A - C$ ARE DIAT. MOL.S.) INDICATES THAT THE SEPN. OF ELECTRON AND NUCLEAR MOTIONS CANNOT BE JUSTIFIED IN THE GENERAL CASE OF CHEM. REACTIONS AND OTHER AT. MOL. PROCESSES WITH RECONSTRUCTION. FACILITY: INST. ELEKTROKHM., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 51:330.115

LEVICH, G. V., LEVICH, Ye. M.

"Abstract Definition of the Concept of a System"

V sb. Modelir. ekon. protsessov (Modeling Economic Processes--collection of works), Moscow, Moscow University, 1971, pp 473-491 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V756)

Translation: The authors consider two approaches to formal definition of the concept of a system: a) a system is an aggregate of interrelated elements; b) a system is a subset in the Cartesian product of some family of sets. A definition is given in terms of set theory. This definition corresponds intuitively to a closed system. A definition is also given of an open system. D. Epshteyn.

1/1

USSR

ZEL'DOVICH, Ya. B.; LEVICH, Ye. V.; SYUNYAYEV, R. A. (Institute of Applied Mathematics, USSR Academy of Sciences)

"Stimulated Compton Interaction between Maxwellian Electrons and Spectrally Narrow Radiation"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; April, 1972;
pp 1392-1408

Abstract: Effects related to stimulated Compton scattering of high-intensity radiation by free electrons (electron heating, distortion of the radiation spectrum, stimulated light pressure) diminish with a decrease of the spectral width and angular aperture of the radiation beam. The integral kinetic equation (its nucleus has been found) permits one to determine the electron heating rate and to find an analytic solution of the evolution of intense spectral lines during stimulated Compton interaction for arbitrary spectral widths and angular apertures of the radiation beam.

1/1

- 86 -

USSR

ZEL'DOVICH, YA. B. and LEVICH, YE. V., Institute of Applied Mathematics of the Academy of Sciences USSR

"Stationary State of Electrons in a Nonequilibrium Radiation Field"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 11, No. 1, 5 Jan 70, pp. 57-60

Abstract: The stationary state of a system of free nonrelativistic electrons in a nonequilibrium radiation field is calculated. It is assumed that the electrons scatter radiation by a Compton mechanism. The radiation field is assumed to be isotropic and it is further assumed that the radiation density is high and the electron concentration is low. Under these conditions the electrons are considered as a heavy admixture and the effect of collisions between one another and with nuclei is neglected. It is shown that the stationary distribution of electrons with respect to momentum is Gaussian and coincides with the Maxwell distribution with respect to energy. The effective electron temperature is expressed in terms of the radiation spectrum. The essence of this result is that for small momentum transfers in an elementary act of interaction, the motion of electrons in momentum space is Brownian. Electrons in intergalactic space are discussed as an example.

1/1

USSR

ZEL'DOVICH, YA. B., LEVICH, YE. V., Institute of Applied Mathematics of the Academy of Sciences USSR

"Plasma Heating by Colliding Beams of Coherent Radiation"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 10, 20 May 1970, pp 497-500


Abstract: The use of colliding beams of coherent radiation to heat a plasma is proposed. One or both of the beams is assumed to be spectrally broad, $\Delta v/v \geq \pm v/c$, where v is the thermal velocity of the electrons. It is noted that light with this Δv cannot, strictly speaking, be called coherent but the required intensity can be achieved only by broadening coherent radiation in some manner, since electrons under such a spectrum have a Maxwell distribution in terms of the magnitude of the longitudinal velocity due to interaction with light without the participation of collisions. It is shown that the rate of heating is then proportional to the product of the intensities of the two beams and independent of the nuclear charge and plasma density. A numerical example is given showing that if the beam intensity is high and the plasma has a low density and a small nuclear

1/2

USSR

ZEL'DOVICH, YA. B., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 10, 20 May 1970, pp 1497-500

charge, the proposed heating method can be considerably more effective than ordinary methods. In the example given the total energy of each beam was 50 joule, the focusing cross section was 10^{-5} cm^2 , the current density was $5 \cdot 10^7 \text{ w/cm}^2$, and the carrier frequency was approximately $3 \cdot 10^{14}$ hertz.



2/2

USSR

UDC 669.295.053.28

DIOMIDOVSKIY, D. A., LEVIDOV, V. A., REVUTSKIY, Ye. Ya., TSIVIRKO, G. P.

"Device for Recording the Rate of Level Changes of a Liquid Electrically Conducting Medium"

Tr. Vses. N-i. i Projektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 72, pp. 163-169. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G216 by the authors).

Translation: The design of a discrete differentiator with inductive output for determination of the rate of level changes of a liquid electrically conducting medium by measurement of the first finite difference in the level of the medium is described. The total error of the device is calculated and the quantization level which minimizes it is determined, for example in measuring the consumption of a mixture of fused salts of Ti with $MgCl_2$. 1 fig; 6 biblio refs.

1/1

57 -

USSR

UDC: 621.378.325 (1)

BODRETSOVA, A. I., BAGDASAROV, Kh. S., KAMINSKIY, A. A., KIRILOVA, N. N., LEVIKOV, S. I. (deceased)

"Powerful Laser With Pyrolamp-Illuminator Based on $Y_3Al_5O_{12}-Nd^{3+}$ "

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 107-108

Abstract: A brief description is given of a quasicontinuous laser with pyrolamp-illuminator based on $Y_3Al_5O_{12}-Nd^{3+}$ with output emission energy of about 1 J at 300°K on a wavelength of 1.064 μm . Lasers with pyrotechnic stimulation have the highest ratio of emission energy to weight. The authors thank A. M. Kevorkov for growing the garnet crystals, and V. N. Gardash'yan for furnishing the calorimeter. One illustration, bibliography of six titles.

1/1

USSR

UDC 621.375.82

BODRETSOVA, A. I., BAGDASAROV, Kh. S., KAMINSKIY, A. A., KISILLOVA, N. N.,
and LEVIKOV, S. I.

"Powerful Laser With Pyrolamp Illuminator of the Material $\text{Y}_3\text{Al}_5\text{O}_{12}\text{-Nd}^{3+}$ "

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works),
No 2, Moscow, "Sov. radio," 1972, pp 107-108 (from RZh-Fizika, No 10,
Oct 72, Abstract No 10D910)

Translation: A quasi-continuous laser with a pyrolamp illuminator of the
material $\text{Y}_3\text{Al}_5\text{O}_{12}\text{-Nd}^{3+}$ with an output generation energy of about 1 joule at
300°K at the wavelength 1.064 μ is briefly described. Lasers with pyrotechnic
excitation have the highest generation energy-to-weight ratio. 6 ref.
Authors abstract.

1/1

USSR

PUTYATIN, Ye. P., YURCHENKO, V. P., ABRAMOV, O. M., LEVIKOV, V. B.,
BERMAN, V. A.

"Normalization of Rotations of Flat Images"

Probl. Bioniki. Resp. Mezhd. Temat. Nauch.-Tekhn. Sb. [Problems of Bionics. Republic Interdepartmental Thematic Scientific and Technical Collection], 1972, No 9, pp 61-69 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V706, by the authors).

Translation: With the goal of further development of the theory of construction of normalization operators for patterns subjected to rotation transformation, the unambiguity of correction of patterns to a standard position is studied, as well as the effects of interfering factors -- changes in brightness and background level.

1/1

- 107 -

1/2 048 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--UNSTEADY ONE DIMENSIONAL MOTIONS OF INFLAMMABLE GAS MIXTURES WITH
THE FORMATION OF DETONATION TYPE WAVES -U-
AUTHOR--(04)--KORUBEYNIKOV, V., LEVIN, A., MEDVEDEV, S.A., CHERNYI, G.G.
COUNTRY OF INFO--USSR
SOURCE--MOSKOVSKII UNIVERSITET, VESTNIK, SERIYA L MATEMATIKA, MEKHANIKA,
VOL. 25, MAR. - APRIL 1970, P. 125-134,
DATE PUBLISHED--70
SUBJECT AREAS--PHYSICS, PROPULSION AND FUELS
TOPIC TAGS--GAS, DETONATION, DETONATION SHOCK WAVE, SHOCK WAVE ANALYSIS,
REYNOLDS NUMBER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1999/1491 STEP NO--UR/0055/70/025/000/0125/0134
CIRC ACCESSION NO--AP0123394
UNCLASSIFIED

2/2 048

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123394

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL STUDY OF A GROUP OF PROBLEMS CONCERNING THE UNSTEADY ONE DIMENSIONAL MOTION OF REACTING GAS MIXTURES IN THE PRESENCE OF DETONATION WAVES. IT IS SHOWN THAT SUPERCOMPRESSED DETONATION WAVES, SUCH AS THOSE PRODUCED BY THE MOTION OF A PISTON OR DUE TO THE INFLUX OF EXTERNAL ENERGY, ARE TRANSFORMED INTO CHAPMAN-JOUQUET SELF SUSTAINING WAVES WHEN THE HEAT DISCHARGE ZONE IS INFINITELY THIN. A CONDITION IS FOUND UNDER WHICH A PLANE DETONATION WAVE FRONT WEAKENED BY A TRAILING KEREFACTION WAVE CAN BE TRANSFORMED INTO A CHAPMAN-JOUQUET WAVE BY AN ELECTROMAGNETIC FIELD AT SMALL MAGNETIC REYNOLDS NUMBERS. A MATHEMATICAL CRITERION FOR THE ASYMPTOTIC CONVERSION OF A DETONATION WAVE WITH A DOUBLE FRONT STRUCTURE INTO A CHAPMAN JOUQUET WAVE IS DISCUSSED.

UNCLASSIFIED

USSR

UDC 543.424,547,414,8

LEVIN, A. A., KHUTORETSKIY, V. M., OKHLOBSTINA, L. V., and SHLYAPOCHNIKOV, V. A., Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR

"Raman Spectra of Polynitro- and α -Halogenopolynitroalkanes"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2575-2577

Abstract: The article gives the first results of a study of the intensities of a number of Raman spectral lines of polynitro- and α -halogenopolynitroalkanes and previously unpublished Raman spectra for $\text{IC}(\text{NO}_2)_3$, $\text{FC}(\text{NO}_2)_3$, $\text{CH}_3\text{CH}(\text{NO}_2)_2$, $\text{ClCH}(\text{NO}_2)_2$, $\text{FCH}(\text{NO}_2)_2$. Intensities were measured for lines of the symmetric stretching and deformation vibrations of C-NO_2 groups. Analysis of the results shows that in the considered series of compounds the line intensities vary within rather a wide range. It is suggested that interaction of the nitro groups with halogen atoms leads to significant changes in the electronic properties of α -halogenopolynitroalkane molecules. An increase in intensities is mainly due to a decrease in the electron-acceptor properties of the substituent and the degree of its polarizability.

1/1

- 63 -

USSR

UDC 51:621.391

LEVIN, A. A.

"The Ratio of the Complexity of the DNF of a Function to the Complexity of the DNF of Its Negation"

Diskretn. Analiz., [Discrete Analysis--Collection of Works], No 16, Novosibirsk, 1970, pp 77-81, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5B462 by G. Blokhina).

Translation: As the author notes, it can be assumed that if a logical algebra function has a complex disjunctive normal form (minimal or reduced), then the corresponding DNF of its negation is also complex. However, it is demonstrated in this article that the reduced DNF of the negation of a function may be

$3^{n(1-\epsilon)}$ times more complex (or simpler) than the reduced DNF of the function itself; similarly, the minimal DNF of the negation may be $2^{n(1-\epsilon)}$ times more complex (or simpler) than the minimal DNF of the function itself (this is true even for monotonic functions).

1/1

Information Theory & Pattern Recognition

USSR

UDC: 681.332.65

LEVIN, A. I., Donetsk Scientific Research Institute of Design and Planning
For Automation of Mining Equipment

"A 'Two-out-of-Five' Code Counter"

USSR Author's Certificate No 284434, filed 2 Sep 68, published 7 Jan 71
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct
71, Abstract No 10B233 P)

Translation: The invention is designed for producing pulse or potential signals in "two-out-of-five" code. "Two-out-of-five" code counters are known which have five or more "memory" cells with interdigital logic connections, the connections between cells increasing in complexity as the number of cells in the counter decreases. The closest prototype to the proposed invention is a pulse counter in which the pulses are in "p-out-of-n" code with fixed "ones" content, which can also be used as a "two-out-of-five" code counter. However, the code combinations in conventional devices are not arranged by the increasing order of their weight functions. When semiconductor elements are used in the registers and binary cells, a considerable amount of energy is required, and utilization as a "two-out-of-five"

1/2

USSR

LEVIN, A. I., Soviet Patent No 284434

code counter is very complicated both as to the number of components and with respect to internal logic connections between elements. To obtain a sequence of code combinations in order of increasing weight functions while simplifying the device at the same time, the proposed counter utilizes two shift registers, each having one fewer cells than the number of code digits. The outputs of the register cells are connected through a decoder to the output circuits. The device also utilizes a feedback circuit which is connected to one of the registers and to an input unit which switches the input timer lines to the timer lines of the registers. One illustration.

2/2

- 31 -

USSR

UDC 620.197.2

ANOSOVA, G. M., RUDOV, V. M., and LEVIN, A. I.

"Corrosion of Steel and the Effect of Certain Inhibitors When Applying Alternating Current"

Moscow, Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 703-704

Abstract: This article contains a discussion of the effect of inhibitors on the corrosion properties of St.3 steel when an alternating current is applied. Graphs are presented showing the corrosion rate and the tangent of the phase shift angle as functions of the concentration of inhibitors for $\text{NaC}_2\text{H}_3\text{O}_2$, Na_3PO_4 , and $\text{K}_2\text{Cr}_2\text{O}_7$, at a frequency of $f = 500$ hertz, with a sinusoidal current density of 30 milliamps/cm² and a corrosion test time of 7.5 hours. It is pointed out that the retarding of electrocorrosion when applying an alternating current can be considered the result of retarding the anodic reaction of solution of the metal and increasing the proportion of the capacitive current. Insignificant additions of the chemical inhibitors to the electrolyte lead to retarding of the corrosion process. However, the protective effect of Na_3PO_4 drops from 94.7% to 62.5% on application

1/2

USSR

ANOSOVA, G. M., et al., Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 703-704
of an alternating current. The protective capacity of the investigated inhibitors compares as follows: $K_2Cr_2O_7 > Na_3PO_4 > NaC_7H_5O_2$. From the experiments formed the conclusion is drawn that the effect of inhibitors during electrocorrosion of steel is exhibited in two ways: directly by retarding the anodic solution rate and indirectly by increasing the proportion of the nonFaraday current.

2/2

USSR

UDC 681.325.53

~~DEVIN~~, A. I., Donetsk Scientific Research Institute for Planning and Design in Mining Machine Automation

"A Two-out-of-Five Code Generator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 8, 1970, pp 118-119, patent No 263998, Filed 2 Sep 68

Abstract: This Author's Certificate introduces a two-out-of-five code generator which contains linear straight and end-around shift registers and an output decoder made up of OR elements. In both registers, the number of cells is one less than the number of code places. As a distinguishing feature of the patent, the device is simplified, energy requirements are reduced, and a sequence of code combinations is produced in accordance with their weight functions by connecting the outputs of the register cells in the encoder into the output circuits, connecting the phasing bus of the end-around register to the output of the last cell in the straight register, and also connecting the outputs of the end-around register to the corresponding inputs of the cells in the straight register.

1/1

1/2 033 UNCLASSIFIED PROCESSING DATE--0210CT70
TITLE--CORROSION RESISTANCE OF A STEEL ALUMINUM CLAD METAL -U-
AUTHOR--(65)--LEVIN, A.I., ESHCHENKO, V.F., LAZAREV, V.F., ZASUKHA, P.F.,
KORSHCHIKOV, V.D.
COUNTRY OF INFO--USSR
SOURCE--ZASHCH. METAL. 1970, 6(1), 39-41
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--CORROSION RESISTANCE, METAL CLADDING, COLD ROLLING, ALUMINUM,
STEEL, BIMETAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/0751 STEP NO--UR/0365/70/006/001/0039/0041
CIRC ACCESSION NO--AP0111944
UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111944

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CORROSION RESISTANCE OF AL CLAD STEEL WAS TESTED IN 3PERCENT NaCl AND 0.5PERCENT NaOH SOLNS. THE CLAD METALS (TOTAL THICKNESS 1.2 MM) WERE OBTAINED BY COLD ROLLING AND THEN ANNEALING AT 560 PLUS OR MINUS 10DEGREES FOLLOWED BY SLOW COOLING TO 200DEGREES. AL USED FOR THE CLADDING LAYER CONTAINED FE 0.1, CU 0.007, TI 0.003, AND MN 0.01PERCENT AND THE THICKNESSES OF THE CLADDING LAYERS WAS 20-25, 40-45, 89-90, AND 130-140 MU. THE RESISTANCE OF THE CLADDING METAL ALONE (1.2 MM THICK) WAS ALSO INVESTIGATED; STEADY STATE POTENTIALS WERE RECORDED FOR ALL CLAD METALS. THE MOST RESISTANT TO THE EFFECT OF THE MEDIUM WAS THE CLADDING METAL ALONE; DECREASE IN THE THICKNESS OF THE CLADDING METAL ALONE; DECREASE IN CLAD METAL CORROSION RESISTANCE; THIS CAN BE EXPLAINED BY THE PRESENCE OF SMALL AMTS. OF FE INCLUSIONS IN THE AL LAYER INTRODUCED MECH. DURING ROLLING AND BY DIFFUSION DURING HEATING.

UNCLASSIFIED

1/2 019
TITLE--A TWO OUT OF FIVE CODE GENERATOR -U-

UNCLASSIFIED

PROCESSING DATE--20NOV70

AUTHOR--LEVIN, A.I.

COUNTRY OF INFO--USSR

SOURCE--USSR 263598

REFERENCE--OTKRYTIYA, IZOBRETIENIYA, PROMYSHLENNYYE OBRATSY, TOVARNYYE

DATE PUBLISHED--70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PATENT, CODING, COMPUTER CODING, SHIFT REGISTER, DIGITAL
DECODER, ENCODING THEORY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3004/1179

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0131003

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 019

CIRC ACCESSION NO--AA0131683

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS AUTHOR'S CERTIFICATE INTRODUCES A TWO OUT OF FIVE CODE GENERATOR WHICH CONTAINS LINEAR STRAIGHT AND END AROUND SHIFT REGISTERS AND AN OUTPUT DECODER MADE UP OF OR ELEMENTS. IN BOTH REGISTERS, THE NUMBER OF CELLS IS ONE LESS THAN THE NUMBER OF CODE PLACES. AS A DISTINGUISHING FEATURE OF THE PATENT, THE DEVICE IS SIMPLIFIED, ENERGY REQUIREMENTS ARE REDUCED, AND A SEQUENCE OF CODE COMBINATIONS IS PRODUCED IN ACCORDANCE WITH THEIR WEIGHT FUNCTIONS BY CONNECTING THE OUTPUTS OF THE REGISTER CELLS IN THE ENCODER INTO THE OUTPUT CIRCUITS, CONNECTING THE PHASING BUS OF THE END AROUND REGISTER TO THE OUTPUT OF THE LAST CELL IN THE STRAIGHT REGISTER, AND ALSO CONNECTING THE OUTPUTS OF THE END AROUND REGISTER TO THE CORRESPONDING INPUTS OF THE CELLS IN THE STRAIGHT REGISTER.

FACILITY: DGNETSKIY NAUCHNO-ISSLEDOVATEL'SKIY I
PROYEKTNO-KONSTRUKTORSKIY INSTITUT PO AVTOMATIZATSII GORNYKH MASHIN.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ANODIC OXIDATION OF POLYFLUOROALKOXY ACIDS --U--
AUTHOR--(03)--CHECHINA, O.N., LEVIN, A.I., SOKOLOV, S.V.
COUNTRY OF INFO--USSR
SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(1), 120
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ELECTROLYTIC OXIDATION, FLUORINATED ORGANIC COMPOUND,
ALKOXIDE, ORGANIC ACID, IR SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1632 STEP NO--UR/0063/70/015/001/0120/0120
CIRC ACCESSION NO--AP0125254
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

2/2 030

CIRC ACCESSION NO--AP0125254

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTROLYSIS OF 20 ML OF 1.5M
SOLN. OF HICF SUB2 CF SUB2) SUB2 CH SUB2 OCH SUB2CH SUB2 CO SUB2 H IN
3:1 MECH PYRIDINE AT ANODIC C.D. 10 A-DM PRIME2 AND 30-5DEGREES WITH PT
ANODE FOR 1.5 HR WITH A P.D. OF 43-80 V GAVE ON DILN. 30PERCENT (HICF
SUB2 CF CUB2) SUB2 CH SUB2 OCH SUB2 CH SUB2) SUB2, 8 SUB10 135-6DEGREES,
N PRIME24 SUBD 1.3467. THE IR SPECTRUM FAILED TO SHOW ANY HO OR C TIMES
C BANDS. FACILITY: URAL. POLITEKH. INST. IM. KIROVA,
SVERDLOVSK, USSR.

UNCLASSIFIED

USSR

UDC 517.5

LEVIN, A. L., Moscow State University imeni M. V. Lomonosov

"Approximations by Rational Functions in a Complex Domain"

Moscow, Matematicheskiye Zametki, Vol 9, No 2, Feb 71, pp 121-130

Abstract: The author considers approximations by the rational functions $R_n(z)$ (in the metric C or L_p) on plane compacta. It is shown that rational and polynomial approximations can coincide for all n , and functions for which this coincidence takes place are described in some cases. Approximations on a finite set of points are studied, and, in part, it is established on what sets there exists a function which is not capable of approximation (in the metric C) by rational functions of a degree no higher than n . The author notes that a number of the questions touched upon in the article were discussed with A. A. GONCHAR.

1/1

UDC: 669.187.2

USSR

KRASNOYADTSEV, N. N., LEVIN, A. M., GLAZOV, A. N., PASHCHENKO, V. Ye.,
KONOVALOV, K. N., VERSHININ, V. I.

"Decreasing the Loss of Titanium During Production of Stainless Steel"

Moscow, Metallurg, No 10, Oct 73, pp 18-19.

Abstract: Balance melts performed in a 40 ton arc furnace at the Kuznetsk Metallurgical Combine have shown that when type Kh18N10T stainless steel is produced by the ordinary technology (using up to 70% of waste of this type of steel in the charge, blowing of oxygen through the bath, running off of slag at the end of the melt and introduction of new lime and spar, alloying with 30% ferrotitanium in the furnace), the titanium losses are approximately as follows: 56% by interaction with oxides, 13% with oxygen and nitrogen in the metal, 27% with oxygen in the air, other losses 4.0%. Replacement of 30% ferrotitanium with 65% and alloying the metal in the ladle rather than in the furnace reduced the mean titanium loss from 57.0 to 52.0%. Several series of experimental melts were performed to find additional means of reducing and stabilizing titanium loss, without success. Success was finally achieved by modifying the technology quite basically. The primary features of the new technology are that the slag is not run

1/2

- 77 -

USSR:

Krasnoryadtsev, N. N., Levin, A. M., Glazov, A. N., Pashchenko, V. Ye.,
Kononov, K. N., Vershinin, V. I., Moscow, Metallurgy, No 10, Oct 73, pp
18-19.

off from the furnace after melting of the ferrochromium, but rather poured into the ladle with the metal at a high temperature (averaging about 1640° C), reducing the length of the reduction period and increasing the degree of reduction of chromium from the slag. The metal is poured from the first ladle into a second ladle through a tap hole 100-110 mm in diameter, and alloyed with 65% ferrotitanium in the second ladle, preventing contact between titanium and slag. Titanium loss was further reduced from 52 to 40.9% by the new technology, and the stability of the titanium content was increased.

2/2

USSR

UDC 532.517.4

LEVIN, A. M., SEDELKINA, M. I.

"Experimental Study of Turbulent Stream Flow in a Bounded Space"

Aerodinamika. Mezhvuz. sb. (Aerodynamics. Intervuz Collection), 1972, No. 14, pp 146-157 (From RZh-Mekhanika, No 3, Mar 73, Abstract No 3B1058)

Translation: The results of an experimental study of average and pulsation characteristics of a flow in axisymmetric turbulent jets propagating in cylindrical chambers of different diameters are presented. The jet flows from a nozzle along the axis of the cylindrical prechamber, behind which there follows a working chamber of greater diameter. The ratio of the diameters of the prechamber and the nozzle is 2.5 and that of the working chamber and prechamber varies within the limits 2.14 to 9.36. The flow parameters are measured with the aid of a thermoanemometer with a Pitot-Prandtl crossed pickup. The effect of constriction of the flow (the ratio of the diameters of the working chamber and the prechamber) on the distribution of average velocities, the mean-square values of the longitudinal and radial components of the pulsation velocity, and turbulent tangential stresses along the axis of the stream and in two of its transverse cross sections is analyzed. It is noted that in the particular case

1/2

USSR

LEVIN, A. M., SEDELKINA, M. I., Aerodinamika. Mezhvuz. sb., 1972, No. 14,
pp 146-157

as distinct from known results the maximum values of the pulsation parameters
correspond to the axis of the stream. 5 ref. A. V. Kolesnikov.

2/2

- 11 -

UDC 669.187.2

USSR

WERSHININ, V. I., LEVIN, A. M., GLAZOV, A. N.,
KRASNORYADTSEV, N. N., and PASHCHENKO, V. Ye., Kuznetsk Metal-
lurgical Combine and Siberian Metallurgical Institute

"Alloying Steel With Aluminum in Pouring From Ladle Into Ladle"
Moscow, Stal', No 6, Jun 73, pp 517-518

Abstract: Three smelting variants of manganese-aluminum steel were investigated in order to determine the most optimum variant. The investigation results are discussed by reference to curves of the magnesium content (in %) dependence on periods of smelting and pouring. Smelting manganese-aluminum steel without drawing off the slag, with double pouring over and alloying with aluminum in the second ladle, makes it possible to get in the ready-made metal in the average 0.0024% Mg; this decreases the melting duration by 15-20 min and reduces the waste due to stratification. By the standard technology with aluminum alloying in the ladle,

1/2

- 35 -

USSR

UDC: 669.187.042.39:546.21:669.786

KOGAN, A. YE., and LEVIN, A. M., Siberian Metallurgical Institute

"Behavior of Nitrogen During the Scavenging Time of Stainless Steel by Oxygen"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 4, 1973, pp 78-84

Abstract: The authors study the above phenomenon during the oxidation period of 21 melts of stainless steel in a 40 ton electric arc furnace. It is shown that two opposite processes take place during scavenging by a vertical tuyere: nitriding of metal due to the ejected oxygen jet of the furnace atmosphere and degassing during decarbonization. Using the ejection calculation data and the results from studying the changes in the gas phase and metal melt composition in the furnace, the authors determined the factor of nitrogen assimilation by the metal from the ejected furnace gases. This made it possible to explain the regularity of each of the processes and derive a general formula which describes satisfactorily nitrogen content variation in the pool during scavenging while taking into consideration the development of nitriding and degassing.

1/1

LEVIN, A.M.

UAS 57493
137407 72

- 31 -

The data gathered were grouped according to sex and age. In each age and sex group were included infants within a range of 15 days of the mean age. Thus, in each of the four sets studied (birth weight) there were 25 age groups (13 boys and 12 girls, including neonates).

Birth weight was 4,000 grams or more in 616 of these 1,807 infants, it ranged from 3,000 to 4,000 in 634, from 2,500 to 3,000 grams in 577, and 2,500 grams or less for the remaining infants.

All measurements were made by well-trained medical personnel in accordance with the routine standardized method of V.V. Bunak. A total of 41,132 anthropometric measurements were made during preventive checkups on the selected group of infants.

Physical development has always been one of the important criteria for evaluating the health of the child population. Yet much time has to be spent on gathering the necessary information, developing the main parameters, determining the rate of development, comparing mean values according to criterion by age and making up "standards," which are rating scales of physical development by the method of correlation and regression scales.

Physical development has always been one of the important criteria for evaluating the health of the child population. Yet much time has to be spent on gathering the necessary information, developing the main parameters, determining the rate of development, comparing mean values according to criterion by age and making up "standards," which are rating scales of physical development by the method of correlation and regression scales.

CHARTING METHOD OF PROCESSING DATA ON PHYSICAL DEVELOPMENT OF CHILDREN AND ADOLESCENTS

UDC 572.51.067.1-053.2:651.3

Article by I.I. Sokolova, V.N. Ilonin, A.M. Levin, All-Union Scientific Research Institute of Social Hygiene and Public Health Organization (Moscow), Hygiene, Pediatrics, and Public Health Organization, No 10, 1972, submitted 18 April 1972, pp 25-29

USSR

UDC: 669.14.018.8-154.094.3

KRASNOYADTSEV, N.N., and LEVIN, A.M., Kuznetsk Metallurgical Plant:
Siberian Metallurgical Institute

"Titanium Waste When Molten Stainless Steel Jets Make Contact With Air"
Moscow, Izvestiya VUZ--Chernaya Metallurgiya, No. 8, 1971, pp 84-89

Abstract: The purpose of this paper is to set up a relationship indicating the effect of direct contact of air on a jet of molten stainless steel as it emerges from the oven, as a function of the length of the jet and the time interval of the contact. The presence of aluminum, titanium, or chromium in the steel sharply increases its tendency to interact chemically with the oxygen in the air, and the relationship to be found relates specifically to the amount of oxidized titanium formed. On the assumption that the metal jet emerging from the oven has the form of a truncated cone, the authors derive an expression for the titanium waste indicating that it is proportional to the length of the jet and the square root of the contact time. Since it is difficult to check this relationship under industrial conditions, the authors made the verification in the laboratory. The conditions of these experiments are described and their results are given in tabular form.

1/1

- 84 -

Acc. Nr:

AP0051171

Abstracting Service:

CHEMICAL ABST.

4/70

Ref. Code:

UR 0131

• 82714j Experimental purification of waste waters in hydrocyclones. Levin, A. M. (Vses. Inst. Ogneupor., Leningrad, USSR). ~~Eng. J.~~ 1970, 35(1), 10-23 (Russ). For waste waters contg. grog particles treatment in settling tanks is commonly used. They need a comparatively large area. The use of hydrocyclones for suspended solids removal provide improved purification effects at high hydraulic load; these units are simple in construction and require only a small area. Expts. on a lab. scale on the use of pressure cones for removal of grog particles, clays, and their mixts. were carried out. At the same time expts. on sludge thickening were carried out. Six pressure cones of the diam. of 10 to 75 mm in the expts. were used. Tested waste waters carried a load of 50-300 g/l. of suspended solids. Pressure of 5, 10, and 15 m of H₂O/cm were tested. On the basis of the expts. made the results obtained were shown graphically as suspended solids concn. in waste waters and sludge, in correlation to used pressure and the suspended solids concn. in the influent. With the increase of suspended solids to ~300 g/l. the effectiveness of hydrocyclones decrease. The grog particles in comparison to clay suspension can be effectively removed and thickened at the same suspended solids concn. On the basis of exptl. studies a closed water circuit for grog plants was given, which include the use of hydrocyclones for suspended solids removal and sludge thickening.

J. Suschka

REEL/FRA
19811218

1/2 012 UNCLASSIFIED PROCESSING DATE--090170
TITLE--CLASSIFICATION OF ELECTRICAL CONTACT COUPLES -U-
AUTHOR--LEVIN, A.P. L
COUNTRY OF INFO--USSR
SOURCE--STANDARTY I KACHESTVO, 1970, NR 4, PP 64-67
DATE PUBLISHED--70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--COUPLING CIRCUIT, INDUSTRIAL STANDARD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1985/1765 STEP NO--UR/0422/70/000/004/0054/0067
CIRC ACCESSION NO--AP0101812
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--09OCT70

2/2 012

CIRC ACCESSION NO--AP0101812

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NEW CLASSIFICATION FORWARDED IN THE ARTICLE PROVIDES FOR A SYSTEMATION OF CONTACT COUPLES, FACILITATES THEIR CHOICE FOR NEW DEVELOPMENTS, STANDARDIZES THE TERMINOLOGY OF THE COMPONENT ELEMENTS OF THE CONTACT COUPLES, AND MAKES IT POSSIBLE TO SPREAD THE METHODS OF CALCULATIONS ADOPTED FOR ONE TYPE OF CONTACTS INTO OTHER TYPES.

UNCLASSIFIED

USSR

UDC: 551.511

KRASNOVSKAYA, L. I., LEVIN, A. V., TKACHENKO, A. V.

"Some Characteristics of Horizontal Turbulent Diffusion in the Atmosphere, and Estimation of These Characteristics in Accordance With the Distribution of an Impurity From an Instantaneous Source"

Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. Min. SSSR (Works. Institute of Experimental Meteorology. Main Administration of the Hydrometeorological Service Affiliated With the Council of Ministers of the USSR), 1972, vyp. 27, pp 76-82 (from RZh-Mekhanika, No 7, Jul 72, Abstract No 7B989)

Translation: On the basis of a diagram worked out for relative turbulent diffusion, the authors analyze experimental data on horizontal diffusion propagation of an impurity (reagent) in supercooled layered clouds. It is shown that all observed types of relations for the horizontal dimensions of a cloud of impurity L as a function of time t can be classified by four characteristic types. The membership of a specific experimental curve $L(t)$ in a given type class is determined by the numerical value of the dimensionless parameter λ^2 , which is a function of the variance of relative

1/2

USSR

KRASNOVSKAYA, L. I. et al., Tr. In-t eksperim. meteorol. Gl. upr. gidro-meteorol. sluzhby pri Sov. Min. SSSR, 1972, vyp. 27, pp 76-82

velocity of initial pulsations v_0^2 , the rate of dissipation of turbulence energy ϵ , and the characteristic Lagrangian of time T .

Experimental data are used to obtain estimates of the characteristics of horizontal turbulent diffusion: $(\bar{v}_0^2)^{1/2} \approx 0.5 \text{ m} \cdot \text{s}^{-1}$, $T \approx 10^3 \text{ s}$, characteristic scale of length $\Lambda \approx 10^3 \text{ m}$, intensity of horizontal turbulent pulsations $v' = \Lambda/T \approx 1 \text{ m} \cdot \text{s}^{-1}$, $\epsilon \approx 5 \text{ cm}^2 \cdot \text{s}^{-3}$. Bibliography of 13 titles. Authors' abstract.

2/2

1/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--NEW STEAM TURBINES WITH GREAT POWER MADE BY THE LENINGRAD METAL
PLANT IMENI 22ND SESSION OF THE COMMUNIST PARTY OF THE SOVIET UNION -U-
AUTHOR-(02)-CHERNYSHEV, P.S., LEVIN, A.V.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, TEPLDENERGETIKA, NO. 2, 1970, PP 6-11
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--METALLURGIC PLANT, TURBINE, BIBLIOGRAPHY, INDUSTRIAL
PLANT/(U)K500166 TURBINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1996/0356 STEP NO--UR/0096/70/000/002/0036/0011
CIRC ACCESSION NO--AP0117593
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117593

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION IS GIVEN OF THE K

500 166 TURBINE AND CERTAIN CHARACTERISTICS ARE PRESENTED FOR SINGLE

SHAFT UNITS WITH A 1,200 MEGAWATT OUTPUT. NINE ILLUSTRATIONS,

BIBLIOGRAPHY CONTAINS FOUR CITATIONS.

FACILITY: LENINGRAD METAL

PLANT.

UNCLASSIFIED

USSR

AZIMOV, S. A., BETER, YE. V., GULYAMOV, U. G., and LEVIN, A. YA., Institute of Nuclear Physics, Academy of Sciences Uzbek SSR

"Inelastic Pion-Nucleon Interactions With High Multiplicity and a Model of Single-Pion Exchange"

Moscow, Yadernaya Fizika, Vol 14, No 1, Jul 71, pp 240-246

Abstract: The authors propose a model of a single-pion exchange for the inelastic collision $\pi + N \rightarrow n \pi + N$ with any (odd) number of secondary pions. They find the spectrum of the effective mass of the system of secondary pions in an analytical form that is convenient for computation. They compare the results of the computation with the available experimental data for different energies and find a good agreement between the suggested model and the experiment. The authors give 2 variations of the model which they describe mathematically and support with several illustrations of a graphic nature. The article contains 5 figures and 7 bibliographic entries.

1/1

- 112 -

USSR

UDC: 621.791.011:669.15-194

MNUSHKIN, O. S., POTAPOV, B. V., LEVIN, A. Ye., Leningrad Polytechnic
Institute imeni M. I. Kalinin

"Influence of Preliminary High-Temperature Deformation on Welded Joints in
Austenitic Steel"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 73, pp 10-12.

Abstract: The influence of high-temperature deformation of austenitic steel on the tendency of the near-seam zone to intercrystalline rupture is studied. The results indicate that high temperature deformation during welding, accompanied by slipping between grains, might intensify intergrain slippage during subsequent tests and thereby decrease the deformation capability of the welded joint.

1/1

- 59 -

USSR

UDC 539.4.015

BERKMAN, I. V., LEVIN, A. YE., and LOZINSKIY, M. G., Leningrad, Moscow

"On the Irregularity of Plastic Deformation of a Dispersion-Hardening Nickel-Base Alloy"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May-Jun 72, pp 39-46

Abstract: The phenomenon of intermittent deformation under tension of a complexly alloyed, heat-resisting, and dispersion-hardening nickel-base alloy (16.1% Cr, 8.8% Mo, 4.0% W, 1.4% Ti, 1.4% Al, 0.4% Fe, the rest Ni) was investigated by methods of high-temperature metallography using a modernized IMASH-5S-65 unit. The lower and upper temperature limits -- 450°C and 780°C -- were determined for the occurrence of intermittent deformation. It was found that the deformation degree, beginning with which the irregular distortion of the alloy starts, increases with rising temperature and decreasing speed. The average value of the stress jump also changes with temperature and deformation rate, showing a clearly expressed maximum at 650°C. The average time between neighboring jump changes analogously. A hypothetical explanation of the mechanism of the intermittent deformation is suggested. It is based on the complex blocking of split dislocations by Suzuki clouds developing on packing defects and by dispersion particles of the hardening

1/2

USSR

BERKMAN, I. V., et al., Fizika i Khimiya Obrabotki Materialov, No 3, May-Jun 72, pp 39-46

phase. The phenomenon of intermittent deformation is directly related to displacing intergranular processes. Four illustrations, six bibliographic references.

2/2

- 45 -

USSR

LEVIN, A. Yu., USKOVA. O. F.

"An Algorithm for Flat Path Arrangement"

Sb. Tr. Aspirantov. Mat. Fak. Voronezh. Un-ta [Collected Works of Graduate Students of the Mathematics Department, Voronezh University], Voronezh, 1972, pp 80-90 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V699, by V. Mikheyev).

Translation: The problem of flat (single-layer) path selection to realize the necessary connections of modules on printed circuits is studied. Noise, mutual modulation and signal reflection are not considered. The mathematical model of the problem is as follows. Rectangle Ω is covered with an integer coordinate grid, in which n pairs of different junctions $\pi_i = \{A_i', A_i''\}$; $A_i' = (x_i', y_i')$, $A_i'' = (x_i'', y_i'')$; $i = 1, 2, \dots, n$ are marked. The problem is to connect the largest possible number of pairs of points $\{A_i', A_i''\}$ along lines of the grid (without going outside of Ω) so that the paths connecting different pairs have no common points. The number of connected pairs is the main goal function; another goal function, subordinate in nature, is the total length of connections made. Of two versions of connection, that where the

1/2

USSR

Levin, A. Yu., Uskova, O. F., Sb. Tr. Aspirantov. Mat. Fak. Voronezh. Un-ta, Voronezh, 1972, pp 80-90.

number of connected pairs is greater is considered better; if the number is equal, that with the least total length of paths is considered better. It is believed that when pair π_i remains unconnected after completion of the task,

none of the paths connecting other pairs can pass through points $\{A_i^1, A_i^2\}$.

Some characteristic is used to select one of the pairs π_i ($i = 1, 2, \dots, n$) and the shortest path is drawn for it. Using this same characteristic, in the next step, one of the remaining pairs is selected and the shortest path which does not cross the path already drawn is drawn for it, etc. The algorithm stops when all pairs are connected or when the only remaining pairs cannot be connected without intersecting paths already drawn. 25 biblio. refs.

2/2

102

1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DESIGN OF HEAT PREPARATION PLANTS OF HEAT AND ELECTRIC POWER PLANTS
AND BOILER HOUSES -U-
AUTHOR--(02)-SHUBIN, YE.P., LEVIN, B.I.

COUNTRY OF INFO--USSR

SOURCE--(PROYEKTIROVANIYE TEPLOPODGOTOVITEL'NYKH USTANOVOK TETS I
KOTEL'NYKH) MOSCOW, ENERGIYA, 1970, 493 PP
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, ENERGY CONVERSION
(NON-PROPULSIVE)
TOPIC TAGS--HEAT SOURCE, FURNACE, ELECTRIC POWER SOURCE, ELECTRIC POWER
PLANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/0241

STEP NO--UR/0000/70/000/000/0001/0493

CIRC ACCESSION NO--AM0132507

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AM0132507

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3.
MEASUREMENT UNITS IN THE BOOK 7. CHAPTER I GENERAL CHARACTERISTICS OF
CENTRALIZED HEAT SUPPLY SYSTEMS AND THERMAL NETWORKS 11. II BASIC
EQUIPMENT OF CENTRALIZED HEAT SUPPLY SOURCES AND HEAT RELEASE CIRCUITS
123. III BASIC EQUIPMENT OF HEAT PREPARATION PLANTS 198. IV BASIC
CALCULATION OF HEAT PREPARATION PLANTS 283. V LAYOUT AND EXAMPLES OF
PROJECT SOLUTIONS OF HEAT PREPARATION PLANTS 439. BIBLIOGRAPHY 490.
THE BOOK DEALS WITH BASIC PROBLEMS IN DESIGN OF HEAT PREPARATION PLANTS.
THE BOOK WAS WRITTEN FOR EMPLOYEES OF DESIGN ORGANIZATIONS WORKING ON
DESIGNS OF HEAT AND ELECTRIC POWER PLANTS, BOILER ROOMS AND THERMAL
NETWORKS. IT CAN BE USED ALSO BY STUDENTS SPECIALIZING IN HEAT POWER
ENGINEERING AND CIVIL ENGINEERING, AS WELL AS WORKERS OF HEAT AND
ELECTRIC POWER PLANTS, BOILER ROOMS AND THERMAL NETWORKS.

UNCLASSIFIED

USSR

UDC 621.9.06--529

ROZINOV, A. G., and LEVIN, B. K.

"An Aggregate System of Programed Control"

Moscow, Avtomatizatsiya Operatsiy Proyektirovaniya Protssessov Mashinostroyeniya (Automation of Operations in the Design of the Processes of Machine Building), edited by V. I. Dikushin, "Nauka," 1970, pp 5-10

Abstract: The large number of types of machine tools and the diversity of the functions which they fulfill requires the creation of a large number of programed control systems, which in turn makes it difficult to design and mass produce such systems.

These circumstances make it advisable to create an aggregate system of programed control. The principle of construction of an aggregate system of numerical control consists of the creation of a limited number of standardized devices, or aggregates, such as arithmetic units, units for input from papertape, memory registers, decoders, etc. Specific systems suitable for specific types of machine tools are built up from these devices. The systems can be classified into four basic types, two of which belong to the class of positional and rectangular systems and two of which belong to the class of continuing and general-purpose systems.

1/3

USSR

ROZINOV, A. G., and LEVIN, B. K., Avtomatizatsiya Operatsiy Proyektirovaniya Protssessov Mashinostroyeniya (Automation of Operations in the Design of the Processes of Machine Building), edited by V. I. Dikushin, "Nauka," 1970, pp 5-10

The majority of programed control systems created up to the present time have been made from ferrite-transistor or ferrite-diode elements. However, the use of such elements in modern machine tools with numerical programed control would significantly reduce the capabilities of the machine tools by reducing the frequency with which control pulses could be transmitted. For this reason it is recommended that the basic element of an aggregate control system by the ASVT [Modular System of Computer Equipment], made from high-speed pulse-potential and potential-logical elements.

An analysis of various methods of building circuits from ASVT elements showed that it would be better to use the principle upon which general-purpose computers are based than the principle of a digital model. In digital computers, all arithmetic and logical operations are carried out sequentially by a central arithmetic unit. In a digital model, on the other hand, these operations are carried out in parallel by individual counters, accumulators, and so on.

2/3

- 11 -

USSR

ROZINOV, A. G., and LEVIN, B. K., *Avtomatizatsiya Operatsiy Proyektirovaniya Protsessov Mashinostroyeniya* (Automation of Operations in the Design of the Processes of Machine Building), edited by V. I. Dikushin, "Nauka," 1970, pp 5-10

The article includes two block diagrams: 1) the structure of an aggregate system of programed control in three coordinates and 2) the structure of a continuous and general-purpose aggregate system of programed control in two coordinates.

3/3

USSR

UDC 621.396.676:629.12

VERSHKOV, M. V., LEVIN, B. M.

"Effect of Masts on the Operating Efficiency of Primary Ship's Antennas"

Tr. TsNII mor. flota (Works of the All-Union Scientific Research Institute of the Maritime Fleet), 1970, vyp. 131, pp 85-90 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B15)

Translation: A study is made of the effect of a grounded mast on the radiation resistance of radiation fed to the base of a conductor in direct proximity to a mast. There are 4 illustrations and a 3-entry bibliography.

1/1

- 12 -

Ion Exchange

USSR

UDC: 541.1238/.9

GOL'DANSKIY, V. I., Corresponding Member Academy of Sciences USSR, LEVIN, B. M., MOKRUSHIN, A. D., KALIKO, M. A., and PERVUSHINA, M. N., Institute of Chemical Physics, Moscow, Academy of Sciences USSR: All Union Scientific Research Institute of Oil Refining, Ministry of Petroleum USSR

"Effect of the Chemical State of the Surface on Annihilation Characteristics of Positronium in Porous Systems"

Moscow, Doklady Akademii Nauk, SSSR, Vol 191, No 4, Apr 70, pp 855-858

Abstract: The authors studied annihilation of positronium atoms localized in the pores of medium porous samples of silica gel, alumina and aluminum-silicon catalyst in an attempt to develop a method for determination of the volume and surface of the pores, since in such pores positronium exists much longer. The life span of positronium was measured by observing delayed coincidence of one of the annihilating γ -quanta and the nuclear γ -quantum in series with the positron which yielded a time tag for the emission of a positron by the Na^{22} source. Because of instrumental limitation the τ_2 component of the time spectrum could not be determined. Only

1/2

USSR

GOL'DANSKIY V. I., et al, Doklady Akademii Nauk, SSSR, Vol 191, No 4, Apr 70, pp 855-858

the characteristics of the longest component connected with the loss of positronium atoms could be obtained -- average life span (τ_3) and intensity (I_2).

At the pressure $p=p_s$ (pressure of saturated water vapor at room temperature) τ_3 was absent and I_2 was zero. In the range $p/p_s=1-0.3$ I_2 increases sharply while τ_3 remains quite unchanged. At pressures $p/p_s < 0.3$ the situation becomes different. In the case of the aluminum-silicone catalyst there occurs a strong quenching of positronium and along with τ_3 time a drop in I_2 occurs with the decrease of p/p_s . No quenching of positronium occurs in silica gel while only slight quenching occurs in alumina accompanied by a small change in I_2 . A relationship exists between the strength of Bronsted acid centers and the changes in τ_3 and I_2 .

2/2

- 14 -

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--FORMATION OF POSITRONIUM IN 1S AND 2S STATES IN OXIDES -U-
AUTHOR--(03)-GOLDANSKIY, V.I., LEVIN, B.M., MOKRUSHIN, A.O.
COUNTRY OF INFO--USSR
SOURCE--JETP LETTERS (USA), VOL. 11, NO. 1, P. 8-42 (JAN. 1970)
DATE PUBLISHED----JAN 70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--POSITRONIUM, BORON OXIDE, POSITRON, SPECTRUM, FORBIDDEN BAND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3009/1750 STEP NO--US/0000/70/011/001/0008/0042
CIRC ACCESSION NO--AP0133655
UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0133655
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACTS. MEASUREMENTS OF THE POSITRON
LIFETIME SPECTRUM OF GRANULATED B SUB2 O SUB3 POWDER REVEALED
POSITRONIUM PRODUCTION. THIS ACCORDS WITH A PROPOSED SCHEME TO
CORRELATE POSITRONIUM FORMATION WITH FORBIDDEN BAND WIDTH IN OXIDES. A
CRITERION FOR POSITRONIUM FORMATION IS FORMULATED. FACILITY:
USSR ACAD. SCIS.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--FORMATION OF POSITRONIUM IN 1S AND 2S STATES IN OXIDES -U-
AUTHOR--(03)-GOLDANSKIY, V.I., LEVIN, B.M., MOKRUSHIN, A.D.
COUNTRY OF INFO--USSR
SOURCE--PIS'MA ZH. EDSP. TEOR. FIZ. 1970, 11(1), 38-42
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--POSITRONIUM, FORBIDDEN BAND, ANTIMONY, LANTHANUM OXIDE,
MERCURY, METAL OXIDE, EXCITED STATE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1994/0999 STEP NO--UR/0386/70/011/001/0038/0042
CIRC ACCESSION NO--AP0115020
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70
 CIRC ACCESSION NO--AP0115020
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POSITRONIUM (I) FORMATION REPORTED
 IN VARIOUS OXIDES IS LIMITED TO OXIDES WITH A FORBIDDEN ENERGY BAND (E
 SUBG) OF LARGER THAN OR EQUAL TO 6.8 EV. FOR THE FORMATION OF I IN THE
 1S STATE IT IS NECESSARY THAT 6.8 EV SMALLER THAN OR EQUAL TO E SUBG
 SMALLER THAN OR EQUAL TO 13.6 EV, AND FOR THE FORMATION OF I IN THE 2S
 STATE, 1.7 EV SMALLER THAN OR EQUAL TO E SUBG SMALLER THAN OR EQUAL TO
 3.4 EV. THE SPECTRUM OF LIFE TIMES OF POSTIRONS IN B SUB2 O SUB3 (E
 SUBG EQUALS 9.0 EV) SHOWED A LONG LIVED COMPONENT (1.7 TIMES 10 PRIME
 NEGATIVE9 SEC). THE SPECTRA FOR POSITRONS IN HGO (E SUBG EQUALS 1.0-1.2
 EV), LA SUB2 O SUB3 (E SUBG EQUALS 2.6 EV), AND SO SUB2 O SUB3 (E SUBG
 EQUALS 4.2 EV) SHOW NO I (1S) IS FORMED BUT MAY SHOW THE FORMATION OF I
 (2S) IN LA SUB2 O SUB3 AND SO SUB2 O SUB3. FACILITY: INST.
 KHIM. FIZ., USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--EFFECT OF THE CHEMICAL STATE OF THE SURFACE ON POSITRONIUM
ANNIHILATION CHARACTERISTICS IN POROUS SYSTEM -U-
AUTHOR--(09)--LEVIN, B.M., MOKRUSHIN, A.D., KALIKO, M.A., GOLDANSKIY, V.I.,
PERVUSHINA, M.N.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(4), 855-
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--SPECTROSCOPIC ANALYSIS, POROSITY, PHYSICAL CHEMISTRY PROPERTY,
SILICA GEL, ALUMINA, SODIUM, ISOTOPE, POSITRON, PARTICLE ANNIHILATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/0774 STEP NO--UR/0020/70/191/004/0855/0858
CIRC ACCESSION NO--AT0131368
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0131368

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A RELATIVE STUDY WAS MADE OF THE TIME SPECTRA FOR POSITRON ANNIHILATION IN MEDIUM SIZED POROUS SAMPLES OF SILICA GEL, ALUMINA GEL, AND ALUMNOSILICATE CATALYST. THE LIFETIME OF THE POSITRONIUM WAS MEASURED BY OBSERVING THE DELAYED COINCIDENCES OF ONE OF THE ANNIHILATION (0.5 MEV) GAMMA QUANTA AND THE 1.3-MEV NUCLEAR GAMMA QUANTA WHICH IS IN A CASCADE WITH THE POSITRON, WHICH GIVES A MEASURE OF THE TIME FOR THE EMISSION OF A POSITRONIUM BY THE PRIME22 NA SOURCE. THE OBSD. DIFFERENCE IN THE QUENCHING OF THE LIFETIME FOR THE ORTHOPOSITRONIUM, τ_{SUB3} , IN 2 SAMPLES OF THE CATALYST DEPENDING ON THE DEGREE OF DEHYDRATION OF THEIR SURFACE ALLOWS THE ORDER OF MAGNITUDE OF THE RATE FOR THE REACTION $H^+ + P^+ \rightarrow H + P^{++}$ YIELDS $H^+ + P^+ \rightarrow H + P^{++}$ PLUS E PRIME POSITIVE PLUS E SUBE PRIME POSITIVE IS THE EXCESS ENERGY REMOVED BY THE POSITRON, TO BE EVALUATED FOR POSITRONIUM ATOMS WHICH ARE LOCALIZED IN THE PORES. IN THE RANGE OF RELATIVE PRESSURES, P/P_{SUBS} EQUALS 0.2-0.014, THE SP. RATE OF QUENCHING OF THE POSITRONIUM IS (0.05-1.0) TIMES 10^7 PRIME7-SEC. BECAUSE OF THE REPEATED COLLISION OF THE POSITRONIUM WITH THE WALLS OF THE PORES, THIS RATE OF QUENCHING CAN ENSURE A NOTICEABLE DECREASE IN THE POSITRONIUM'S LIFETIME FOR VERY SMALL SURFACE CONCNS. OF $H^+ + P^+$ POSITIVE IONS IN THE PORES.
FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

LEVIN, B. R., KUSHNIR, A. F.

"Methods of Adaptations in Problems of Nonparametric Detection and Differentiation of Signals"

Tr. IV. Vses. Soveshch. po Avtomat. Upr., 1968. Teoriya Avtomat. Upr. [Works of Fourth All-Union Conference on Automatic Control, 1968. The Theory of Automatic Control], Moscow, Nauka Press, 1972, pp 170-179 Discussion 256-262 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V215 by the authors).

Translation: This report studies two problems. The first is the detection of a quasideterministic signal with known a priori distribution of parameters. The signal is masked by stable noise with unknown distribution density. The problem is solved using an independent sample of observations. A processing algorithm is studied, providing the minimum observation time to achieve a predetermined risk in detection of a signal with a signal/noise ratio near zero.

1/1

- 21 -

USSR

UDC 621.391:519.27

LEVIN, B. R. and SHINAKOV, YU. S.

"Bayes System for the Simultaneous Discrimination of Several Signals and Estimation of their Parameters"

Moscow, Radiotekhnika, Vol 26, No 4, 1971, pp 16-21

Abstract: The authors study the structure (in the Bayes' sense) of a system for the simultaneous discrimination of several signals and the estimation of their parameters. The results of the study show that the Bayes' system for the simultaneous discrimination of several signals and the estimation of their parameters realizes only the determined realization conversions of the observed signal and interference mix. The synthesized system for simultaneous discrimination can be presented as two interconnected units: a unit for estimating the parameters of the signals and a unit for discriminating several signals. The optimal synthesis of the system also includes determining the optimal structure of the discrimination and estimating units and the optimal form of their connection. Estimation in the synthesized system precedes discrimination. The optimal estimates in the case studied are Bayes' estimated signal parameters, each of which is calculated while taking into consideration the presence of several mutually exclusive hypotheses associated with the statistical properties of signals and interference. The resulting optimal rules for discrimination are standard Bayes' rules for solution

USSR

LEVIN, B. R. and SHINAKOV, YU. S., Radiotekhnika, Vol 26, No 4, 1971, pp 16-21

whose loss matrix nevertheless depends on the results of observations. This is conditioned by the fact that values of the estimates obtained in the estimation unit have to be considered in making a decision. Original article: one figure, 13 formulas, and one bibliographic entry.

2/2

- 30 -